



Annual Meeting & Workshops – Learning Objectives

General Sessions

Saturday, May 18, 2019

8 – 10 am

Refresher Course Lectures

Moderator: Michael Eaton, MD

At the end of the session participants will be better able to:

1. Apply the latest imaging techniques to decision making in patients with tricuspid valve disease.
2. Identify trends in the use of ultrasound imaging cardiovascular patients in the perioperative period.
3. Understand the SCA's initiative to improve care in CV anesthesia.
4. Apply basic knowledge of healthcare economics to specific practice issue.

10:30 am – Noon

Atrial Fibrillation and Arrhythmia

Moderator: Jonathan Ho, MD

At the end of the session participants will be better able to:

1. Review the mechanism/etiologies of chronic atrial fibrillation.
2. Review the current treatment and goals of therapy for chronic atrial fibrillation.
3. Discuss interventional strategies for chronic atrial fibrillation.
4. Review the mechanism/etiologies of post-operative atrial fibrillation.
5. Discuss clinical application of risk models of post-operative atrial fibrillation.
6. Review guidelines/recommendations for management of post-operative atrial fibrillation.
7. Discuss updates from the SCA Clinical Practice Improvement Atrial Fibrillation Working Group.
8. Discuss updates from the SCA Clinical Practice Improvement Atrial Fibrillation Working Group.

10:30 am – Noon

SCA/STS: Interventions for the Mitral Valve

Moderator: Charles Nyman, MBChB

At the end of the session participants will be better able to:

1. Incorporate current guidelines and evidence impacting surgical decision making (Secondary MR; repair vs replace).
2. Understand some of the echocardiographic information that the surgeon needs to know in managing mitral regurgitation.
3. Understand the current therapeutic options for percutaneous mitral valve interventions, indications, limitations and future directions.
4. Understand the role of echocardiography in both qualitative and quantitative assessment of mitral regurgitation.

1 – 2 pm

Fellow and Resident – A Career in Cardiothoracic Anesthesiology: Mission Possible

Moderators: Tara Brakke, MD and Jacques Neelankavil, MD

At the end of the session participants will be better able to:

1. Understand the different career choices following CT fellowship.
2. Understand the challenges involved in starting a new job as a CT anesthesiologist.
3. Understand career decisions made by successful CT anesthesiologists.

1 – 3:30 pm

Adult Cardiac Anesthesia Tasting Menu – A Little Something for Everyone

Moderator: Mary Beth Brady, MD

At the end of the session participants will be better able to:

1. Describe the unique challenges of taking care the morbidly obese patients for cardiac surgery with emphasis on pathophysiology, impact on outcome and practical clinical management.
2. Describe medical, surgical and percutaneous treatment options for patients with Hypertrophic cardiomyopathy.
3. Delineate the advantages and disadvantages of the use of “protocol” anesthesia in cardiac surgery.
4. Identify the cardiovascular patient at risk for a difficult airway and describe intubation and particularly extubation strategies for these patients.
5. Stratify the risk of lead extractions and formulate a perioperative plan for high risk patients.
6. Define interventional echocardiography and describe manpower options to cover such cases without bleeding revenue.
7. Describe the components of LVADS and ECMO and identify the most recent advancements regarding these devices.
8. Describe risk and benefits of the current trend in limiting opioid use during cardiac surgical procedures.

1 – 3:30 pm

Quick Communications and Complicated Cases in Cardiac Coagulation

Moderators: James Abernathy, MD; Michael Eaton, MD

At the end of the session participants will be better able to:

1. Define heparin resistance and know strategies to treat it.
2. Learn about new factor concentrates and how they might fit into your practice.
3. Review novel, oral anticoagulation agents and appreciate their impact on patient management in the cardiac OR.
4. Recognize when a patient really has HIT and understand the treatment options when cardiopulmonary bypass is your only option.
5. Appreciate why patients receive clopidogrel before bypass and recognize the complexity of measuring its response and the decision to operate now or later.

2 – 3:30 pm

Fellow and Resident – Problem-Based Learning Discussion: Aortic Dissection

Moderators: Tara Brakke, MD and Jacques Neelankavil, MD

At the end of the session participants will be better able to:

1. Review the clinical presentation and classification of acute aortic dissection.
2. Describe the surgical steps for repair of Type A dissection.
3. Determine the key components of the anesthetic plan for surgical repair.
4. Describe important uses for TEE during aortic dissection repair of aortic.
5. Review the major pre-operative, intra-operative, and post-operative complications associated with aortic dissection.

4 – 5 pm

Fellow and Resident – Complex Case Discussion with Expert Panel

Moderators: Tara Brakke, MD and Jacques Neelankavil, MD

At the end of the session participants will be better able to:

1. Identify unique features of complex cases and discuss systems, processes, and options for management.
2. Describe how to manage complex case presentations in cardiac surgery.
3. Manage complex cases by appreciating pathophysiology and supporting decisions based on current medical literature.

4 – 5:30 pm

Cardiothoracic Critical Care: Adding Value

Moderator: J. Mauricio Del Rio, MD

At the end of the session participants will be better able to:

1. Delineate the ideal characteristics and expected profile of a cardiothoracic critical care physician and to demonstrate the suitability of cardiothoracic anesthesiologists to train and evolve into that role, in both the academic and private practice settings.
2. Demonstrate how cardiothoracic critical care and the CTICU are ideal environments for close collaboration between the CT surgeon and the CT anesthesiologist & CT critical care physician.
3. Understand the particular needs of the CT surgical critical care patient population and the requirements for a close and productive collaboration with CT surgeons in CTICU.
4. Analyze the causes of lack of exposure of anesthesiology trainees to CT critical care and to explain the rationale to teach critical care to anesthesiology residents and fellows in the CTICU.

4 – 5:30 pm

Quality Safety: Advancing Teamwork

Moderators: James Abernathy, MD; Nadia Hensley, MD

At the end of the session participants will be better able to:

1. Describe what great teamwork looks like.
2. Understand how to evaluate quality of teamwork.
3. Appreciate where great teamwork happens.
4. Recognize teamwork attributes in other disciplines that can be applied to medicine.
5. Analyze characteristics of individuals that contribute to good teams.
6. Understand how our actions can contribute to poor teamwork and patient outcomes.

Sunday, May 19, 2019

8 – 9 am

Earl Wynands Lecture

Moderator: Michael Eaton, MD

At the end of the session participants will be better able to:

1. Understand the development of surgical approaches to congenital heart disease.
2. Understand the anesthesia implications of congenital heart disease.
3. Understand the growing adult congenital population and its influence on the practice of adult cardiac anesthesia.

9 – 10:30 am

VAD 2019: VAD Care in the OR and Beyond

Moderator: Nelson Thaemert, MD

At the end of the session participants will be better able to:

1. Describe the appropriate echocardiographic views required in the pre- and post-CPB TEE examinations in a patient having a VAD implantation.
2. Identify the causes and potential treatments in a patient with LVAD support who develops right ventricular failure.
3. Distinguish between the myriad of VAD-related signs that may present in a variety of conditions, including hypovolemia, vasodilation, thrombosis, and pump failure.
4. Recognize some of the complications that may occur in the perioperative period in a variety of scenarios in a patient with VAD mechanical support.

11 am – 12:30 pm

Academic Anesthesia Session

Moderator: Jenn Hargrave, DO

At the end of the session participants will be better able to:

1. Understand the balance demands of clinical productivity vs the non-clinical professional career advancement and departmental responsibilities in the fields of cardiothoracic anesthesiology education and research.
2. Recognize the principles used by departmental leadership to provide time for nonclinical contributions and responsibilities and processes for capturing and valuing non-clinical activities.
3. Understand the principles and analyze the evidence behind successful approaches to adult learning, since nonclinical time is valuable and educational activities must be efficient and effective.
4. Examine practical approaches to utilization of adult learning theory in a cardiothoracic anesthesiology setting.
5. Analyze potential pathways of success for clinical-scientist, in the field of cardiothoracic anesthesiology, research endeavors both in a well-supported academic setting and smaller institutions with less resources.

11 am – 12:30 pm

Perioperative Delirium in CT Surgery: Mechanisms and Strategies

Moderator: Sreekanth Cheruku, MD

At the end of the session participants will be better able to:

1. Identify patients who are at risk for perioperative delirium.
2. Describe risk factors for perioperative delirium.
3. List perioperative strategies to reduce the incidence of delirium.
4. Evaluate evidence-based strategies for treating perioperative delirium.

11 am – 12:30 pm

Society of Critical Care Anesthesiologists (SOCCA) Session: ECMO 2.0 - Beyond Cannulation

Moderator: Shahzad Shaefi, MD

At the end of the session participants will be better able to:

1. Develop an understanding of the expanding use and scope of ECMO.
2. Understand how and why a retrieval service in high volume centers has developed.
3. Develop a knowledge base of the financial aspects pertinent specification to ECMO initiation and maintenance.
4. Explore some ideas of future developments and uses in the field of ECMO.

1:30 – 3 pm

Anesthesia & Analgesia State of the Art

Moderator: Nikolaos Skubas, MD

At the end of the session participants will be better able to:

1. Discuss the value of preoperative pulmonary function tests.
2. Optimize care of thoracic surgery patients with low pulmonary compliance.
3. Understand the value of three-dimensional echocardiography derived left ventricular strain.
4. Explore the predictive value of 3D strain to detect low cardiac output syndrome.
5. Review the physiology of right ventricular failure following LVAD insertion.
6. Explore new predictors of post-LVAD right ventricular failure.

1:30 – 3 pm

EACTA Session: Potpourri from Across the Sea

Moderator: Donna Greenhalgh, MD

At the end of the session participants will be better able to:

1. Define a low platelet count, what happens to the count post-surgery, and causes and factors.
2. Diagnose HIT.
3. Understand advantages & disadvantages of mechanical support.
4. Understand outcomes & complications of mechanical support.
5. Understand risk stratification for TAVR & SAVR.
6. Describe pros & cons for combined coronary stenting & TAVR.
7. Describe pros & cons for 2 stage procedure.
8. Understand anaesthetic considerations for high risk TAVR.

1:30 – 3 pm

Research: Frontiers of Knowledge

Moderator: J. Danny Muehlschlegel, MD

At the end of the session participants will be better able to:

1. Understand how big data can be integrated into clinical care.
2. Learn techniques to protect the myocardium.
3. Identify areas of our practice that will benefit from a personalized approach.
4. Critically review the literature to identify the five most relevant articles of the last year.

3:30 – 5:30 pm

Intraoperative Thoracic Disasters

Moderator: Wanda Popescu, MD

At the end of the session participants will be better able to:

1. Describe the anesthetic management of tracheo-bronchial traumatic injury.
2. Design an anesthetic plan for management of intra- operative thoracic disasters related to vascular injury during thoracic surgical procedures.
3. Describe the utility of ECMO to support oxygenation in patients with limited cardiorespiratory reserve undergoing one lung ventilation.

3:30 – 5:30 pm

Re-Thinking the Unthinkable: Ethical Issues in CT Anesthesia

Moderators: Jenn Hargrave, DO; Yasdet Maldonado, MD

At the end of the session participants will be better able to:

1. Analyze and assess ethical principles associated with the initiation, duration and cessation of mechanical support.
2. Appreciate the benefits and harms of initiation of resuscitative attempts and when to withhold or withdraw resuscitation using bioethical principles as guidance and team communication skills for appropriate allocation of resources.
3. Understand the importance of promoting collegial personnel interactions to support patient safety by identifying disruptive physician behavior and recognizing resources available to manage such interactions.

3 – 5:30 pm

Best of Meeting Oral Abstract and Early Career Investigator Award Presentations

Moderator: J. Danny Muehlschlegel, MD

At the end of the session participants will be better able to:

1. Describe existing knowledge regarding several current research topics related to cardiovascular and thoracic surgical and interventional patients.
2. Define research areas that still remain poorly understood regarding these topics.
3. Describe recent research inquiries regarding these topics.

Monday, May 20, 2019

8 – 10 am

When the Healer is Sick: Personal Stories of Surviving Burnout

Moderator: Candice Montzingo, MD

At the end of the session participants will be better able to:

1. Recognize risk factors for burnout in the cardiac anesthesiologist.
2. Discuss the impact of burnout on clinical outcomes.
3. Understand individual resilience and how it prevents clinical burnout.
4. Discuss healthy options for self-preservation for continuing to care for chronically sick patients.

11 am – 12 pm

Keynote Lecture

Moderator: Christopher Troianos, MD

At the end of the session participants will be better able to:

1. Recite new technologies in medicine and anesthesia.
2. Recite new partnerships related to the practice of anesthesia.
3. Recite how and why physicians can and should become leaders in healthcare.

1:30 – 3 pm

Bench to Bedside: Best Evidence about Risk, Mechanism, and Therapy of Organ Injury for the Clinician

Moderators: Frederic Billings, MD; Shahzad Shaefi, MD

At the end of the session participants will be better able to:

1. Appreciate the scope of organ injury following cardiac surgery.
2. Review mechanisms of perioperative organ injury.
3. Learn the results of recent clinical trials of organ injury prevention interventions in cardiac surgery.
4. Understand how to implement common management practices to limit organ injury following cardiac surgery.

1:30 – 3 pm

Building Expertise in the Care of the Adult Congenital Patient

Moderator: Adriaan Van Rensburg, MD

At the end of the session participants will be better able to:

1. Describe the treatment and surgical decision making and options for patients with single ventricle physiology.
2. Appraise the common echocardiography challenges during surgery for patients with single ventricle physiology undergoing cardiac surgery.
3. Describe specific challenges for anesthesia providers during cardiac surgery on patients with single ventricle physiology.

1:30 – 3 pm

Transfusion Issues in Cardiac Surgery

Moderators: Kamrouz Ghadimi, MD; Linda Shore-Lesserson, MD

At the end of the session participants will be better able to:

1. Discuss recent evidence behind the selection of hemoglobin thresholds for transfusion related to bleeding and/or hemodilution in cardiac surgery.
2. Identify the transfusion thresholds chosen in the recent Transfusion in Cardiac Surgery (TRICS) III trial and the rationale behind choosing these threshold values.
3. Analyze the study design of the TRICS III trial and decide if the results of this trial apply to your clinical practice.
4. Determine the utility of zero-balance ultrafiltration during cardiac surgery using cardiopulmonary bypass.
5. Identify priming techniques during cardiopulmonary bypass which may reduce blood transfusion.
6. Describe the process of hemoconcentration and ultrafiltration during cardiopulmonary bypass and the benefits and consequences of its use.
7. Identify effective methods for bolstering hemoglobin before surgery in patients with preoperative anemia.
8. Define intraoperative blood conservation strategies for cardiac surgical patients when blood transfusion is not an option.
9. Outline the modern-day process of acute normovolemic hemodilution in adult cardiac surgery.

3:30 – 5 pm

Focus on POCUS

Moderator: Jonathan Ho, MD

At the end of the session participants will be better able to:

1. Discuss the current state of POCUS practice in medicine (beyond Anesthesiology) and ongoing trends, including incorporation of POCUS training in residencies and educational opportunities for practicing anesthesiologists.
2. Review the scope of the perioperative POCUS exam.
3. Discuss in detail the steps involved developing a formal POCUS practice/service.
4. Debate the merits of requiring a certification process for POCUS competency/practice.

3:30 – 5 pm

Pay-for-Performance is Here! Performance, Outcomes, and Dollars for the Cardiac Anesthesiologist

Moderator: Laurent Glance, MD

At the end of the session participants will be better able to:

1. Understand the difference between process measures and outcome measures.
2. Understand the limitations of process measures.
3. Understand the challenges of creating risk-adjusted outcome measures.
4. Explore feasibility of measuring anesthesiologist performance using risk-adjusted outcome measures.

3:30 – 5:30 pm

Best of Meeting Oral Abstract Presentations

Moderator: Sasha Shillcutt, MD

At the end of the session participants will be better able to:

1. Describe existing knowledge regarding several current research topics related to cardiovascular and thoracic surgical and interventional patients.
2. Define research areas that still remain poorly understood regarding these topics.
3. Describe recent research inquiries regarding these topics.

4:30 – 6 pm

Echo Jeopardy!

Moderators: Feroze Mahmood, MD; Andrew Maslow, MD; Peter Panzica, MD

At the end of the session participants will be better able to:

1. Learn a wide array of cardiothoracic issues surrounding the care of patients.
2. Learn a wide array of vascular issues surrounding the care of patients.
3. Discuss and review, in question and answer format, a variety of echocardiographic, cardiac, thoracic, and vascular topics.

Tuesday, May 21, 2019

8 – 10 am

Working in the Dark: Interventional Cardiology in 2019

Moderator: Frederick Cobey, MD

At the end of the session participants will be better able to:

1. Appreciate the limitation of echocardiography in evaluating right ventricular dysfunction in LVADS.
2. Understand the utility of the pulmonary artery pulsatility index in assessing right ventricular function.
3. Understand the mechanism of right ventricular dysfunction post LVAD.

10:30 – Noon

Comprehensive Perioperative Care for the Cardiac Surgical Patient

Moderators: Heather Lander, MD; Jacques Neelankavil, MD

At the end of the session participants will be better able to:

1. Describe the operational logistics involved with implementing and maintaining an ERACS pathway.
2. Identify specific patient populations likely to benefit from enrollment in ERACS.
3. Recognize the appropriateness and limitations of enrolling cardiac surgery patients in pre-procedural prehabilitation programs and post-procedural cardiac rehabilitation programs.

10:30 – Noon

Evidence-Based Best Practice for Transplant

Moderator: Nelson Thaemert, MD

At the end of the session participants will be better able to:

1. Review best practice recommendations for patients undergoing orthotopic heart transplantation.
2. Review best practice recommendations for patients undergoing lung transplantation, including use of cardiopulmonary bypass and ECMO.
3. Understand how Ex-Vivo lung perfusion can be utilized in the setting of organ procurement and transplantation.
4. Describe the current state of organ transplantation from high risk donors and its implications on care for the recipient.

10:30 – Noon

Providing Leadership in the EP Lab in 2019

Moderator: Sreekanth Cheruku, MD

At the end of the session participants will be better able to:

1. Discuss logistical challenges for the anesthesia team in the electrophysiology lab.
2. Describe the pathophysiology of SVT, atrial flutter, atrial fibrillation and ventricular fibrillation.
3. Describe the anesthetic management of patients undergoing ablation procedures in the electrophysiology lab.
4. Discuss new electrophysiology procedures and future implications for anesthesiologists in the electrophysiology lab.

1 – 2 pm

Fireside Chat: Promoting Women Leaders

Moderator: Daryl Oakes, MD

At the end of the session participants will be better able to:

1. Describe the data available regarding the current landscape in our profession as it relates to gender and gender equity.
2. Discuss the advantages of promoting a more diverse, equitable professional environment.
3. Clarify the factors that likely contribute to the real or perceived gender disparities in our field.
4. Explore strategies that can be employed by individuals, colleagues, leadership, and organizations that can help promote a more equitably professional environment.

1 – 2:30 pm

Super Echo Panel

Moderator: Kathryn Glas, MD

At the end of the session participants will be better able to:

1. Discuss various echocardiographic techniques employed to solve intraoperative echocardiographic dilemmas.
2. Define how the use of transesophageal echocardiography provided the solution to challenging clinical scenarios.
3. Provide opportunities for junior anesthesiologists to present echocardiography based cases that provide new knowledge.

2 – 3:30 pm

Emerging Topics in Aortic Surgery: Congenital Aortic Syndromes

Moderator: James Anton, MD

At the end of the session participants will be better able to:

1. Review management algorithms and treatment options for patients with a bicuspid aortic valve and ascending aortic pathology.
2. Discuss the pathophysiology of Marfan's syndrome and its implications on the anesthetic and surgical management of this patient population.
3. Review the diagnosis and treatment of aortic valve insufficiency in the pediatric and young adult patient.

1 – 2:30 pm

Trends in Heart Failure Management

Moderator: Jenny Kwak, MD

At the end of the session participants will be better able to:

1. Recognize current trends in heart failure management.
2. Summarize different types of mechanical circulatory support.
3. Interpret the economics of heart failure management.
4. Describe the current heart allocation system.

2:30 – 5:30 pm

Fellow and Resident TEE Review

Moderators: Tara Brakke, MD; Jacques Neelankavil, MD

At the end of the session participants will be better able to:

1. Recognize the principles and physical properties of ultrasound.
2. Identify common echocardiographic artifacts and pitfalls.
3. Describe and identify VSD, ASD, and other common congenital heart lesions.

4 – 5:30 pm

Management of Incidental Aortic Stenosis during CABG in the TAVR Era

Moderator: Paul Lennon, MD

At the end of the session participants will be better able to:

1. Identify patients undergoing CABG in whom aortic valve replacement is also indicated.
2. Identify patients in whom TAVR is indicated.
3. Identify patients undergoing CABG in whom concomitant aortic valve dysfunction may be best addressed by TAVR at a later date.

4 – 5:30 pm

Right Heart: Supporting the “Other” Ventricle

Moderator: Candice Montzingo, MD

At the end of the session participants will be better able to:

1. Recognize the importance of appropriate preoperative assessment of pulmonary hypertension in your patient.
2. Understand appropriate optimization of pulmonary hypertension in the peri-operative period including inhaled pulmonary vasodilator therapies.
3. Discuss surgical management of RV failure, specifically criteria for RV assist devices.

Workshops

Workshop 1: Advanced TTE – Incorporating Advanced Echo Concepts into Practice

Moderators: J. Mauricio Del Rio, MD; Kimberly Howard-Quijano, MD

At the end of the session participants will be better able to:

1. Discuss advanced methods of quantitative cardiac assessment.
2. Recognize the role of quantitative echocardiography in clinical decision making.
3. Perform quantitative analysis using sample data sets.

Workshop 2: Enhanced Recovery after Cardiac Surgery (ERACS): Design the System, Tailor the Anesthesia, and Enhance Your Patient's Recovery

Moderators: James Anton, MD; Michael Grant, MD

At the end of the session participants will be better able to:

1. Provide the background and rationale for Enhanced Recovery After Cardiac Surgery (ERACS).
2. Describe the role of the anesthesiologist in an ERACS program.
3. Introduce a framework for applying ERACS principles and procedures at your institution.
4. Outline and develop toolsets for the application of several key perioperative ERACS process measures.

Workshop 3: Perioperative Ultrasound: POCUS – It Seems to be EVERYWHERE! Here's How to Use It

Moderators: Megan Kostibas, MD; Shahzad Shaefi, MD

At the end of the session participants will be better able to:

1. Outline and develop toolsets for the application of several key perioperative ERACS process measures.
2. Provide an insight into the future uses and SCA formalization of POCUS.
3. Understand the of Basic TTE exam but also with comparative TEE images to allow familiarity and note distinctions for participants.
4. Be able to assess presence of pneumothorax, pulmonary edema and other lung pathologies.
5. Familiarize with Focused Assessment with Sonography in Trauma and aid use to guide clinical decision-making.
6. Aid diagnosis of acute pathologies such as pericardial effusion or tamponade, pulmonary embolism and ventricular dysfunction in the setting of undifferentiated shock or hypotension
7. Understand utility and mechanics of TTE during CPR/ACLS.
8. Discuss methods and applications of ultrasound use for line placement.

Workshop 4: Electrophysiology – Making Sense of Pacemakers, ICDs, and Lead Extractions

Moderators: Jonathan Ho, MD; Candice Montzingo, MD

At the end of the session participants will be better able to:

1. Describe the basic design, functioning, and programming of implantable/permanent pacemakers and Implantable Cardioverter Defibrillators (ICDs).
2. Discuss the current guidelines for the perioperative management of pacemakers and ICDs for elective and emergency cases.
3. Identify and assess pacemaker and ICD function using information from device interrogation, radiographs, and ECGs.
4. Develop perioperative management strategies for various clinical scenarios.
5. Perform basic interrogation and reprogramming of pacemakers and ICDs in a hands-on session using device programmers.
6. Discuss perioperative management of lead extraction procedures.

Workshop 5: Mechanical Circulatory Systems (MCS) – New Development and Emerging Technologies in Extracorporeal Life Support

Moderators: Laeben Lester, MD; Jenny Kwak, MD

At the end of the session participants will be better able to:

1. Manage hemodynamics in patients with mechanical circulatory support.
2. Analyze and differentiate ventricular assist device systems and alarms.
3. Understand advantages and disadvantages of different cannulation strategies and ECMO configurations.
4. Utilize TEE in management of mechanical circulatory support.
5. Recognize new developments and technologies related to mechanical circulatory support.

Workshop 6: Interventional Workshop – The Secrets of Percutaneous Procedures

Moderators: James Abernathy, MD; Nelson Thaemert, MD

At the end of the session participants will be better able to:

1. Discuss some of the anesthetic considerations for the implantation of trans-catheter valves in a variety of locations within the heart.
2. Understand the role for left atrial occlusion devices and describe the anesthetic and echocardiographic considerations surrounding their implantation.
3. Analyze the structure and function of percutaneous aortic valves and review the equipment required for their implantation.
4. Understand the indications and procedural steps for Mitraclip implantation.
5. Perform a Qlab based 3-dimensional analysis of a mitral valve undergoing percutaneous clipping.
6. Describe some of the echocardiographic considerations required for real-time imaging guidance of Mitraclip procedures.

Workshop 7: 3D TEE – Principles, Essentials, and So Much More

Moderators: Alina Nicoara, MD; Charles Nyman, MBCh

At the end of the session participants will be better able to:

1. Understand the advantages and disadvantages of 3D echocardiography.
2. Discuss the different types of 3D imaging modalities and understand the utility of each technique in different clinical scenarios.
3. Discuss the proposed components of a standard 3D echocardiographic perioperative exam.

Problem-Based Learning Discussions (PBLDs)

PBLD 1: Lung Transplantation Management – Strategies, Tips and Tricks

Peter Slinger, MD; Kenichi Ueda, MD

At the end of the session participants will be better able to:

1. Discuss the importance of driving pressure during one-lung ventilation.
2. Summarize the effects of thoracic epidural blockade on the cardiovascular system.
3. Outline the use of erector spinae plane blocks for post-thoracotomy analgesia.

PBLD 2: ECMO in Thoracic Surgery

Rebecca Klinger, MD; Eleanor Vega, MD

At the end of the session participants will be better able to:

1. Identify specific patient risk factors and thoracic surgical procedures that may benefit from extracorporeal membrane oxygenation (ECMO).
2. Develop a strategy for the initiation, management, and discontinuation of ECMO for thoracic surgery.
3. Identify and discuss the treatment of potential complications/hazards of ECMO.
4. Discuss the role of transesophageal echocardiography (TEE) for the management of ECMO.

PBLD 3: How to Design and Implement a Thoracic ERAS Program at Your Hospital

Amanda Kleiman, MD; Alessia Pedoto, MD

At the end of the session participants will be better able to:

1. Discuss the specific obstacles to recovery following thoracic surgery.
2. Define the principles behind enhanced recovery after surgery programs.
3. Discuss the key components of a successful enhanced recovery after thoracic surgery program.
4. Discuss the preoperative elements of an ERAS program for thoracic surgery.
5. Discuss the intraoperative and anesthetic components of ERAS programs for thoracic surgery.
6. Discuss the post-operative goals of care following thoracic surgery.
7. Understand the differences between programs for lung resection and esophageal surgery.
8. Discuss the costs and barriers to implementing a thoracic ERAS program.

PBLD 4: Patient on LVAD for Thoracic Surgery

Wanda Popescu, MD; Diana Anca, MD

At the end of the session participants will be better able to:

1. Understand the indications, types, and physiology of LVADs.
2. Develop an anesthetic management plan for patients with LVAD undergoing thoracic surgery.
3. Understand the pros & cons of a cardiac vs general anesthesiologist covering the case.

PBLD 5: Esophagectomy

Ju-Mei Ng, MD; Jagtar Singh Heir, DO

At the end of the session participants will be better able to:

1. Outline patient selection and surgical approaches for esophagectomy.
2. Recognize the patient at risk of preoperative complications.
3. Develop an anesthetic plan with emphasis on airway, lung isolation and on-lung ventilation, fluid and pain management, and immediate postoperative care.
4. Discuss controversies surrounding preoperative fluid management and the use of vasoactive agents.
5. Summarize the latest on minimally invasive procedures and enhanced recovery programs.

PBLD 6: Biventricular Dysfunction and Pulmonary Resection – Is There an EF Limit?

Randal Blank, MD; Ryan Lesh, MD

At the end of the session participants will be better able to:

1. Understand the implications of general anesthesia, mechanical ventilation, and one lung ventilation on cardiovascular function in patients with ventricular dysfunction.
2. Understand the impact of pulmonary resection surgery via thoracotomy and thoracoscopy on patients with ventricular dysfunction.
3. Develop anesthetic management strategies to optimize perioperative outcomes in patients with severe ventricular dysfunction undergoing pulmonary resection surgery.

PBLD 7: Team Building in the Cardiac OR - There is No "I" in TEAM

James Abernathy, MD; Emmilie Aveling, PhD

At the end of the session participants will be better able to:

1. Describe characteristics that make good teams.
2. Describe individual characteristics that make great leaders.
3. Explain how individuals can elicit great teamwork from those around them.
4. Identify interventions that are likely to improve teamwork, and key factors to consider to support implementation of interventions.

PBLD 8: Mitral Regurgitation: A Team-Based Approach to Decision-Making

Douglas Shook, MD; Anne Cherry, MD

At the end of the session participants will be better able to:

1. Discuss the pre-surgical plan for a patient coming for cardiac valve surgery.
2. Understand the physiology of primary versus secondary valve regurgitation.
3. Describe severity assessment of secondary versus primary valve regurgitation.
4. Describe the current guidelines to assist in decision-making for valve intervention.

PBLD 9: Perfusion Secrets - What You Should Know, But Probably Don't

Austin Adams, MD; Ron Angona, MS

At the end of the session participants will be better able to:

1. Recognize heparin-induced thrombocytopenia (HIT) in the cardiac surgery patient, and discuss the implications for cardiac surgery.
2. Describe alternative anticoagulation strategies for the conduct of cardiopulmonary bypass (CPB) in patients with HIT.
3. Discuss the use of retrograde autologous prime for cardiac patients undergoing cardiac surgery.
4. Recognize the clinical effects of cold agglutinin disease, as well as the implications for CPB.
5. Discuss the use of warm, continuous cardioplegia in patients with cold agglutinin disease.
6. Review the techniques of electrolyte management while on CPB.

PBLD 10: Factor Recombinants, Factor Concentrates and Fibrinogen

Kenichi Tanaka, MD; Jerrold Levy, MD

At the end of the session participants will be better able to:

1. Describe the indications and contraindications of prothrombin complex concentrate.
2. Describe the indications and contraindications of fibrinogen concentrate.
3. Describe the indications and contraindications of recombinant factor VIIa.
4. Understand the role of coagulation monitoring to guide factor concentrate therapy.
5. Discuss the risks associated with factor concentrate therapy.

PBLD 11: Perioperative Delirium - The Experts' Opinions on This Everyday Concern

Charles Brown, MD; Shahzad Shaefi, MD

At the end of the session participants will be better able to:

1. Understand diagnosis and risk factors for delirium.
2. Understand short- and long-term consequences of delirium.
3. Understand strategies for prevention and management of delirium.

PBLD 12: Pitfalls and Solutions in Invasive Arterial Pressure Measurement

Jacob Gutsche, MD; Albert Perrino, MD

At the end of the session participants will be better able to:

1. Understand the pros and cons of invasive arterial monitoring based on site selection.
2. Understand the management of complications related to invasive arterial monitoring.
3. Review sterile technique for arterial line insertion.

PBLD 13: Management of Spinal Cord Ischemia

Daryl Oakes, MD; Lindsay Raleigh, MD

At the end of the session participants will be better able to:

1. Describe the risk factors for spinal cord ischemia or infarction in the setting of aortic repair.
2. Relate the anatomy of the spinal cord vascular supply to the risk spinal cord injury.
3. Review monitoring modalities available to identify spinal cord ischemia intra-operatively.
4. Describe the rationale for lumbar CSF drainage and protocols for management of lumbar CSF drains.
5. Demonstrate an understanding of the signs, symptoms, timing, and management of the full spectrum of the full spinal cord injury.

PBLD 14: Managing the Patient Taking the New Oral Anticoagulants

Michael Duggan, MD; Korrin Scott, MD

At the end of the session participants will be better able to:

1. Understand the data and primary rationale underlying the FDA-approved indications for NOAC agents.
2. Define the pertinent pharmacologic properties of NOAC agents in the perioperative period including the varying reliance on renal excretion.
3. Review the pertinent laboratory and point of care testing options available to measure the anticoagulant effects of NOAC agents.
4. Discuss the primary clinical trials that lead to FDA approval of reversal agents for the NOACs and their application to the perioperative patient.
5. Discover ongoing clinical trials which may expand the indications of NOACs and additional reversal agents in development.

PBLD 15: Severe Right Ventricular Dysfunction after Cardiac Surgery - Everyone's Nightmare

Gautam Sreeram, MD; André Denault, MD

At the end of the session participants will be better able to:

1. Recognize the unique anatomic and physiologic features of the right ventricle.
2. Identify risk factors which may predispose patients to RV failure after cardiac surgery.
3. Describe appropriate strategies to monitor the failing right ventricle including the utility of central venous, right ventricular and pulmonary arterial pressure monitoring as well as transesophageal echocardiography.
4. Assess the impact of various anesthetic techniques and agents on the right ventricle.
5. Evaluate options to treat RV failure including intravenous/inhalational/intratracheal therapies and mechanical support.

PBLD 16: Renal Protection Strategies for Cardiac Surgery: What's New? What's Outdated?

Viachaslau Barodka, MD; Amanda Fox, MD

At the end of the session participants will be better able to:

1. Describe perfusion strategies which decrease the risk of developing kidney injury during cardiac surgical procedures.
2. Discuss the most recent evidence regarding renal protection strategies for patients undergoing open cardiac surgical procedures.
3. Identify the risks and benefits of various fluid management techniques as they pertain to preservation of kidney function during cardiac surgical procedures.

PBLD 17: Severe Pulmonary Hypertension and Noncardiac Surgery - No Need to be Afraid

Jochen Steppan, MD; Jonathan Leff, MD

At the end of the session participants will be better able to:

1. Describe the classification and outline the pathophysiology of pulmonary hypertension.
2. Explain the perioperative changes that impact pulmonary vascular resistance and right heart function.
3. Plan a systematic anesthetic approach to patients with pulmonary hypertension undergoing non-cardiac surgery.

PBLD 18: Heparin-Induced Thrombocytopenia and Cardiopulmonary Bypass

Alycia Wanat-Hawthorne, MD; Michael Eaton, MD

At the end of the session participants will be better able to:

1. Understand the characteristics and pathophysiology of heparin-induced thrombocytopenia.
2. Understand the differences between the types of diagnostic laboratory testing and how they should be interpreted.
3. Analyze the various strategies for anticoagulating a patient for cardiopulmonary bypass with heparin induced thrombocytopenia.

PBLD 19: Challenges of Ventricular Assist Device Placement

Ratna Vadlamudi, MD; HelenMari Merritt, DO

At the end of the session participants will be better able to:

1. Describe the key echocardiographic findings to note in ventricular assist device placement.
2. Evaluate for right ventricular failure in patients undergoing left ventricular assist device placement.
3. Summarize strategies to wean from cardiopulmonary bypass in patients post ventricular assist device placement.
4. Identify surgical concerns associated with ventricular assist device placement.

PBLD 20: The Complex VT Ablation - Making it Easy

Diana Anca, MD; Linda Shore-Lesserson, MD

At the end of the session participants will be better able to:

1. Preoperative evaluation for the patient undergoing a Ventricular Tachycardia (VT) Ablation.
2. Anesthetic considerations and management of the complex VT Ablation.
3. Potential complications of ablating a complex VT and their management.
4. Coordination and utilization of resources in the remote anesthetizing location.

PBLD 21: LVAD Patient with a Struggling RV: Do's and Don'ts during Non-cardiac Procedures

Jiapeng Huang, MD; Tara Brakke, MD

At the end of the session participants will be better able to:

1. Discuss the physiologic and pathophysiologic effects of left ventricular assist device on cardiovascular, respiratory, gastrointestinal, and hematologic systems.
2. Understand anticoagulation management of left ventricular assist device patients undergoing surgery.
3. Develop anesthetic monitoring plans for left ventricular assist device patients undergoing endoscopy.
4. Recognize the symptoms, hemodynamic changes, and echocardiographic manifestations of right ventricular failure in left ventricular assist device patients.
5. Discuss the advantages and disadvantages of general anesthesia vs. monitored anesthesia care for left ventricular assist device patients undergoing endoscopy.
6. Formulate treatment plans for hemodynamic instabilities in left ventricular assist device patients.

PBLD 22: Managing the Adult Congenital Patient for Elective Non-cardiac Surgery

Gregory Janelle, MD; Michael Joynt, MD

At the end of the session participants will be better able to:

1. Understand various surgical approaches to genetic aortopathies.
2. Be familiar with multidisciplinary concerns of congenital cardiac syndromes in the perioperative environment.
3. Understand the importance of intraoperative imaging in the effective treatment of genetic aortopathies.

PBLD 23: Walking on a Wire: High Risk TAVR under Monitored Anesthesia Care

Jared Feinman, MD; Sharon McCartney, MD

At the end of the session participants will be better able to:

1. Discuss the advantages and disadvantages of monitored anesthesia care (MAC) vs general anesthesia (GA) in TAVR. Discuss the advantages and disadvantages of monitored anesthesia care (MAC) vs general anesthesia (GA) in TAVR.
2. Assess which high-risk patients are reasonable candidates for TAVR under MAC.
3. Describe the advantages and disadvantages of different imaging techniques for assessing paravalvular leak post-TAVR.
4. Understand the available options for embolic protection during TAVR and what data support their use.
5. Generate a complete anesthetic plan for TAVR under MAC, including medications used, access, hemodynamic monitoring, imaging, and post-procedure disposition.

PBLD 24: The Guidelines for Valvular Heart Disease - How to Make Sense of it All

Michele Sumler, MD; Stanton Shernan, MD

At the end of the session participants will be better able to:

1. Describe and implement a systematic approach for evaluating valvular abnormalities using echocardiography.
2. Describe and understand the current guidelines for when surgical intervention is warranted in patients with valvular pathology.
3. Discuss alternatives to surgical management for non-surgical candidates with valvular disease.
4. Plan and manage possible complications from valvular interventions.

PBLD 25: Perioperative Management of a Patient with VA ECMO

Meena Bhatia, MD; Priya Kumar, MD

At the end of the session participants will be better able to:

1. Recognize the indications for VA ECMO.
2. Differentiate the risks and benefits of central versus peripheral VA ECMO.
3. Compare the various cannulation strategies for peripheral VA ECMO.
4. Summarize the options for left ventricular venting with peripheral VA ECMO.
5. Understand the intraoperative implications of hemodynamic monitoring while on VA ECMO.
6. Discuss the methodology for weaning a patient from VA ECMO.

PBLD 26: Still Bleeding: Tips and Tricks for Troubleshooting Perioperative Coagulopathy

Prakash Patel, MD; Megan Kostibas, MD

At the end of the session participants will be better able to:

1. Identify risk factors for perioperative coagulopathy and increased transfusion in cardiac surgery.
2. Understand the mechanisms that lead to coagulopathy and describe preventative interventions for decreasing coagulopathy and transfusion in cardiac surgery.
3. Be aware of the current guidelines for transfusion and perioperative management of pro- and anticoagulants.

PBLD 27: Jehovah Witness Patient? No Worries! - Tricks of the Trade for Perioperative Management for Blood Conservation

Sanjay Dwarakanath, MD; Johannes Steyn, MD

At the end of the session participants will be better able to:

1. Discuss the beliefs of Jehovah's witness and its peri-operative implications.
2. Identify risk factors that can predict increased requirement for blood transfusion.
3. Explain the pharmacologic and interventional management options for blood conservation before initiation of cardiopulmonary bypass.
4. Explain various perfusion interventions and its rationale that can minimize hemodilution and decrease requirements for transfusion.
5. Develop pharmacologic interventional measures for ongoing bleeding during and after Cardiopulmonary Bypass in Jehovah's Witness patients.

PBLD 28: Anesthetic Considerations for Robotic Mitral Valve Repair

Peter Neuburger, MD; Lisa Rong, MD

At the end of the session participants will be better able to:

1. Understand the anesthetic considerations and unique monitors required for robotic cardiac surgery.
2. Identify important TEE views and measurements required for robotic mitral valve repair.
3. Review possible complications specific to robotic cardiac surgery and discuss appropriate treatment.

PBLD 29: Endocarditis - What You Don't Know Can Hurt You

Heather Hayanga, MD; Bruce Bollen, MD

At the end of the session participants will be better able to:

1. Describe the findings and criteria used to diagnose endocarditis.
2. Discuss medical management strategies including appropriate laboratory testing, antimicrobial therapy, imaging, and potential for counseling opportunities.
3. Define the surgical indications for endocarditis.
4. Describe pertinent cardiac anatomy as it relates to endocarditis.
5. Describe various surgical treatment options based on the pathophysiology of the disease.
6. Develop a treatment plan for the intravenous drug user requiring cardiac surgery for endocarditis.
7. Describe current evidence-based literature regarding outcomes following cardiac surgery for intravenous drug users with endocarditis.